Drawing & Dimensioning Grading

Guideline for grading Paperweight drawings, and drawings produced in the Yo-yo labs.

Dimensioning features where points will be taken. First occurrence basis per report based on a perfect score of 10.

0.1 Point issues:

1. Line thickness: dimensions, center lines, phantom lines, leaders, and arrows, to be finer than drawing lines
2. Missing center lines
3. Missing center points
4. Missing arrows, unless ordinate dimensioning is used
5. Both arrows point same way

0.2 Point issues:

6. Showing tangencies.
7. Arrows pointing to radii at quadrants, or arrows do not point to or go through the center of the radius.
8. Overlapping dimensions, arrows, or leaders. General clutter causing difficulty reading print.
9. Not using an extra print when necessary to minimize clutter, or to clarify a detail.
10. Double dimensioning
11. Wrong way to show dimension, such as showing a diameter as a radius, or visa versa
12. Having dimensions in parenthesis when you do not intend the dimension to be shown as a reference dimension
13. Missing lines
14. Dimensions within a view
15. If using multiple sheets, not specifying there are other sheets, i.e. sheet 1 of 2, sheet 2 of 2, and so on
16. Mixed, or wrong Angle Projections. In America we sweep (3rd angle projections), in Europe they roll (1st angle projections).
17. Cross-sections not oriented, or displayed properly.
18. Different size fonts.
19. Dimensioning to tangencies.
20. Extra dimensions that are not necessary.
21. Wrong values.
22. Wrong line type.

0.5 Point issues:

23. Missing dimensions
24. Not showing whole part, except for the Lab I deliverable where the top view can be a separate drawing from the profile view. The Lab III requirement is to combine the views.
25. Not specifying engraving depth and tool to use as a note.
26. Design shows major geometry features that cannot be machined with tooling provided, such as groove depths designed deeper than the length of cut for the tool.
27. Missing features for snap fit; draft where there should be straight wall engagement.
28. Dimensions upside-down.

1.0 Point issues

29. Conflicting dimensions between mating core and cavity molds: i.e. height of core exceeds depth of cavity.

Part Program Grading

Guideline for grading Paperweight, and Yo-yo lab programs.

Programming features where points will be taken. First occurrence basis per program based on a perfect score of 10.

0.1 Point issues:

1. Missing decimal points.(mill)
2. Lowercase letters.(mill)
3. Letter 'O', instead of number '0' in 'G' words (mill)
4. 'Z' feed cutting level in positive area (above part) (mill)

0.2 Point issues:

5. Facing with inappropriate tool. (mill, or lathe)
6. Missing a G0 Z.1 at tool start-up. (mill)
7. Missing an X, and Y movement at tool start-up. (mill)
8. Rapid Z move on same block as X, and Y move. (mill)
9. G1, and G2 on same block. (mill)
10. Two 'M" codes on same block (mill)
11. 2 feeds on same block. (mill)
12. Tool pick-up and X, Y move on same block. (mill)
13. Turning backwards, (from chuck towards turret). (lathe)
14. Using a trepanning tool where a larger tool would be more suitable for the operation. (lathe)
15. Finish cuts at roughing feed rates. (lathe)
16. Rapid move to Z.1 before positioning to in the X, and Y axes first, at tool start-up. (mill)
17. Using wrong tool for trepanning. (lathe)
18. Not including a feed when last tool used had a feed that is inappropriate for the new tool picked up. (mill)
19. Missing a G90 on Z moves after being in G91 mode for the X, and Y moves.(mill)
20. Missing 'M26', and 'M30' to end program (mill)
21. Missing 'R' on G2, and G3 moves. (mill)
22. Missing quadrant points on arc moves. (mill)

0.5 Point issues:

23. Plunging too deep for selected tool. (mill, and lathe)
24. Missing a Z retract before positioning to a new location. (mill)
25. Missing a 'G1' on the Z move that goes back into the part after rapid positioning to a new location. (mill)
26. Not returning to a G1 after being in a G2, or G3 move when the intent was to go back to linear motion, from circular motion.(mill)
27. Turning OD to Z-.5. (lathe)
28. Missing workshift designation after each tool pickup (G55, G56, G57). (mill)